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(21) International Application Number: PCT/IT94/00030 (22) International Filing Date: 19 March 1994 (19.03.94) (30) Priority Data: PD93A000063 19 March 1993 (19.03.93) IT (71)(72) Applicants and Inventors: SANTIGLIA, Giannino [IT/IT]; Vicolo Vicenza, 8, I-30030 Fossò (IT). CON- VENTO, Marino [IT/IT]; Via Comio, 22, I-30030 Fossò (IT). (74) Agent: BENETTIN, Maurizio; Via Sorio, 116, I-35141 Padova (IT).		(81) Designated States: AU, BR, CA, JP, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>Without international search report and to be republished upon receipt of that report.</i>
(54) Title: ELECTRONIC TERMINAL FOR THE TRANSFER AND RECEIPT OF MONEY (57) Abstract The invention is an electronic device that makes it possible to transfer money without using bank notes, credit cards or cheques and without getting in connection with banks or credit institutes. The new electronic appliance is basically constituted by an independent, portable terminal equipped with display, keyboard and infrared rays transmitter-receiver for the connection, in which the holder's private data, bank data and accounting situation are permanently stored. By connecting the terminal with another identical terminal or with the electronic walk-up counter of a bank, and inserting in each of them the appropriate safety codes, it is possible to record money transfers from one terminal to the other, to carry out normal bank transactions and to update the accounting situation inside the terminal.		

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TITLE

ELECTRONIC TERMINAL FOR THE TRANSFER AND RECEIPT OF
MONEY

DESCRIPTION

At present payments of goods or services can be carried out using cash, cheques or credit cards. Credit cards, however, do not allow one to have an immediate situation of his current account and do not inform the users about the actual expenditures made and deducted from their current accounts, since the issue of the statements of account is periodical, generally monthly.

The invention described in the present patent makes it possible to spend and receive money without using cash or cheques and to have a report of one's accounting situation at any moment.

The invention consists of a pocket terminal complete with display, keyboard and connecting plug.

Through the connection of this terminal with an appropriate walk-up counter of one's bank or even of different banks, the monthly statement of account or the balance of one's current account are stored in the terminal itself.

At the moment of paying or receiving money, the

terminal is to be connected with another, identical terminal, and, after inserting one's personal code/password to have access to the use of the terminal, the economic transaction can be set out. Apart from the amount that is transferred/received, the terminals interchange also the private data and the bank data of the respective users, in such a way as to identify the drawer and the beneficiary.

This way the terminal updates the stored information, deducting (or adding) the amount that has just been noted and informs the user about the present situation of his bank account: there is no need for the holder to go to his bank and ask for a statement of account.

When, successively, the user connects the terminal with the suitable counter opened by the bank, the pocket terminal provides for transmitting to the bank the transactions he has stored and for storing the following balance, updated also with those transactions that haven't been stored in the pocket terminal, like bank transfers made from far away, payments of bills, direct payments and others.

Optionally, the pocket terminal can store and transmit also other data, such as addresses, phone numbers and so on.

The system consists of two main units: the portable unit and the fixed unit, installed inside the bank or one of its branches.

The portable unit is obviously the most important and innovative part of the whole system.

This device has the shape and size of a normal pocket calculator, as can be seen in Figure 1, and it combines the characteristics of a calculator with those of an infrared rays remote control. In order to explain the whole idea clearly, we can make reference, for example, to the block diagram shown in Figure 1, in which it is possible to observe the internal structure of the portable unit:

- keyboard to type in the access codes and the data concerning statements of account, transactions and any note;
- liquid-crystal display with alphanumeric characters, which makes for easy communication between user and portable unit;
- eeprom (electrically erasable PROM) memory, indispensable to store all the transactions the user wants to carry out and any important note. The eeprom memory, in fact, can be erased only electrically: therefore, in case of power failure,

no damage can be done to the data that have been stored up to that moment; it is obvious that these memories, in the appropriate safety conditions, can be cleared and then used again;

- infrared rays transmitter and receiver, which is the unit that makes it possible to transfer information between two portable units or between a portable unit and a fixed one;

- cpu + program, that is, central processing unit, which controls the whole process described above with the aid of a total control program supplied with the cpu.

Here below is a detailed analysis of the codification system of the access keys.

In our system the code is alphameric and with the same number of characters it presents a greater number of combinations in comparison with the exclusively numeric code.

The bank gives the user an identification code, which is stored in the portable unit so that it cannot be modified by the user or during the various transactions.

A further personalization is obtained allowing the holder to add a personal code at the end of the code decided by the bank: only the holder will know

this specific code.

In order to exclude the possibility that anyone can compose this code, it can be recorded only with a special device that is installed inside the bank: in fact, only by getting in connection with this device it is possible to compose the code. In other words, outside the bank the device does not accept any "personal code" after the code fixed by the bank itself.

A transaction between two portable units takes place as follows.

The user types in his personal code number in order to be identified by the portable unit: if the code is right, the portable unit will give its consent to the transaction.

Now the communication between the user and the portable unit is open and it takes place by means of the display and the keyboard. Obviously, also the other user has to carry out the same operations: when he is ready, the two portable units will be positioned as shown in Figure 3.

This way the data will be transmitted and stored in the respective portable units: they will contain information like the kind of transaction, the amount and the user's bank code, in order to make

the identification from the bank possible at the moment of cashing the money or updating the account; however, they won't contain the users' personal codes.

So, a high level of privacy is obtained without compromising the clearness of the transactions.

As regards the transactions, it is important to point out that the portable unit contains two storage zones:

- in the first storage zone the bank only can load the maximum amount of money that can be used: when this amount has been spent the portable unit itself will reject any request for further expenses;
- in the second there are all the data concerning payments in favour of the owner of the portable unit; these payments can contribute to the increase of the amount present in the current account and become money that can be spent only after the bank's due control and approval.

The erasure of all the data relevant to the transaction that is being carried out will take place if:

- the data of the bank or personal code are incorrect due to wrong operation or bad transmission;

- the amount that can be spent is equal to zero;
- the time allowed for the access to the transaction has passed.

At this point the customer must go to the bank and have the portable unit "reset".

There it will be possible to have controls, prints and summaries of what has taken place.

In the cases in which the portable unit is stolen and/or one tries to type in a wrong access code for more than three times, the portable unit refuses the access, even with the correct code, holding in storage only the last accounting situation. After such an event the storage can be made operative again only by the bank personnel by means of appropriate tools.

This system for the execution of economic transactions is very useful from a fiscal point of view, since there isn't any cash flow: every transaction is stored on portable units and then reported on the statements of account, so that fiscal evasion and illicit transactions are considerably reduced.

The system described above can have an important extension, which consists in the fact that, optionally, the keystrokes can be repeated by a

vocal synthesizer mounted on the portable unit.

The advantage is evident for users with weak sight or for the blind: for the latter, for example, at present it isn't possible to use cheques, while with this system there wouldn't be any problem. It is possible to supply an earphone with a plug to be inserted in a socket of the portable unit, so that other people cannot hear the code. In order to facilitate the retrieval of lost portable units or as a sort of memorandum, on the back of the device several data like the owner's name, surname and address, the name of the bank, the serial number, etc. will be indicated.

The following is just one example among many of the practical applications of the invention in question, illustrated in the attached table.

Figure 1 shows a possible implementation of the portable unit.

It is possible to notice the sensor (S) that connects the two terminals with each other, the keyboard (T), by means of which it is possible to type in the instructions for the transaction and the display (V), which illustrates the transaction stage by stage and/or the information stored in the terminal.

Figure 2 shows, with a block diagram, the process that takes place inside the portable unit.

Figure 3 shows the respective position of two portable units at the moment of the transmission of the information.

The above are the basic outlines of the invention, on the basis of which the technician will be able to provide for implementation; therefore, upon implementation, certain variants may be present, without any negative effect upon the basic innovation.

With reference to the above description and the attached table, the following claims are put forth.

CLAIMS

1) Pocket electronic device, characterized by the fact that it is constituted by an electronic circuit equipped with storage, a display, a keyboard and with an infrared rays transmitter-receiver sensor for the connection with electronic appliances of the same kind or with walk-up bank counters, and where this device has the user's private data and the identification codes of the user's current account and bank permanently stored, and where this electronic device stores every transaction and after each transaction updates the situation of the user's current account.

2) Pocket electronic device as per claim 1, characterized by the fact that it can be connected with electronic appliances of the same kind and that it can store money transactions and also other data like the other user's private data, current account number and bank, and where by connecting the electronic device with the terminal installed in one's bank it is possible to transmit the records of the payments made, thus allowing the bank to update and store in its electronic device the situation of the user's current account.

3) Pocket electronic device as per claims 1, 2,

characterized by the fact that the connection between two terminals takes place either by means of infrared ray beams or other data transmission systems.

4) Pocket electronic device as per claims 1, 2, 3, characterized by the fact that the amounts received from other pocket electronic devices can be added to the amount that can be spent, provided that the bank gives its confirmation, and characterized by the fact that it allows one to make any kind of payment with any device.

5) Pocket electronic device as per claims 1, 2, 3, characterized by the fact that it is provided with a second storage, independent from the first one, which stores only the credit operations made with the same kind of appliance, excluding the devices with which banks are endowed, and where such credit transactions are then transferred to the devices with which banks are endowed.

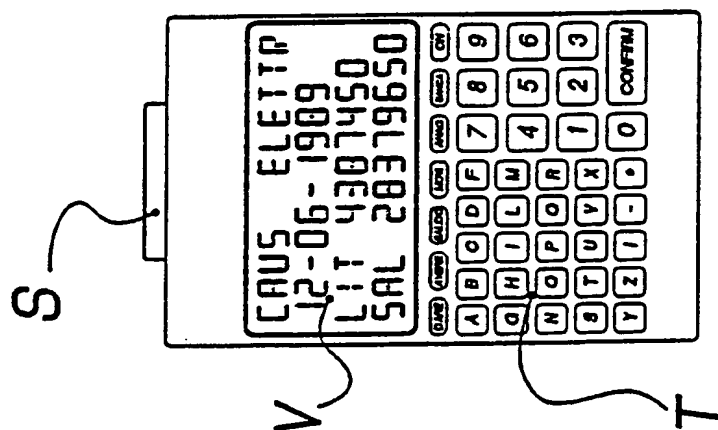


figura 1

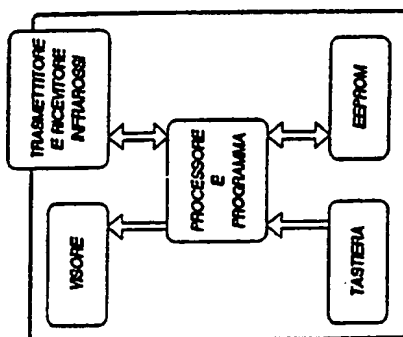


figura 2

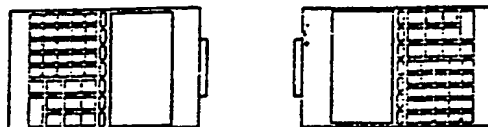


figura 3